
Summary Data on General Aviation Fleets

Prepared for:

NGATS Institute Cost Workshop

August 24 – 25, 2006

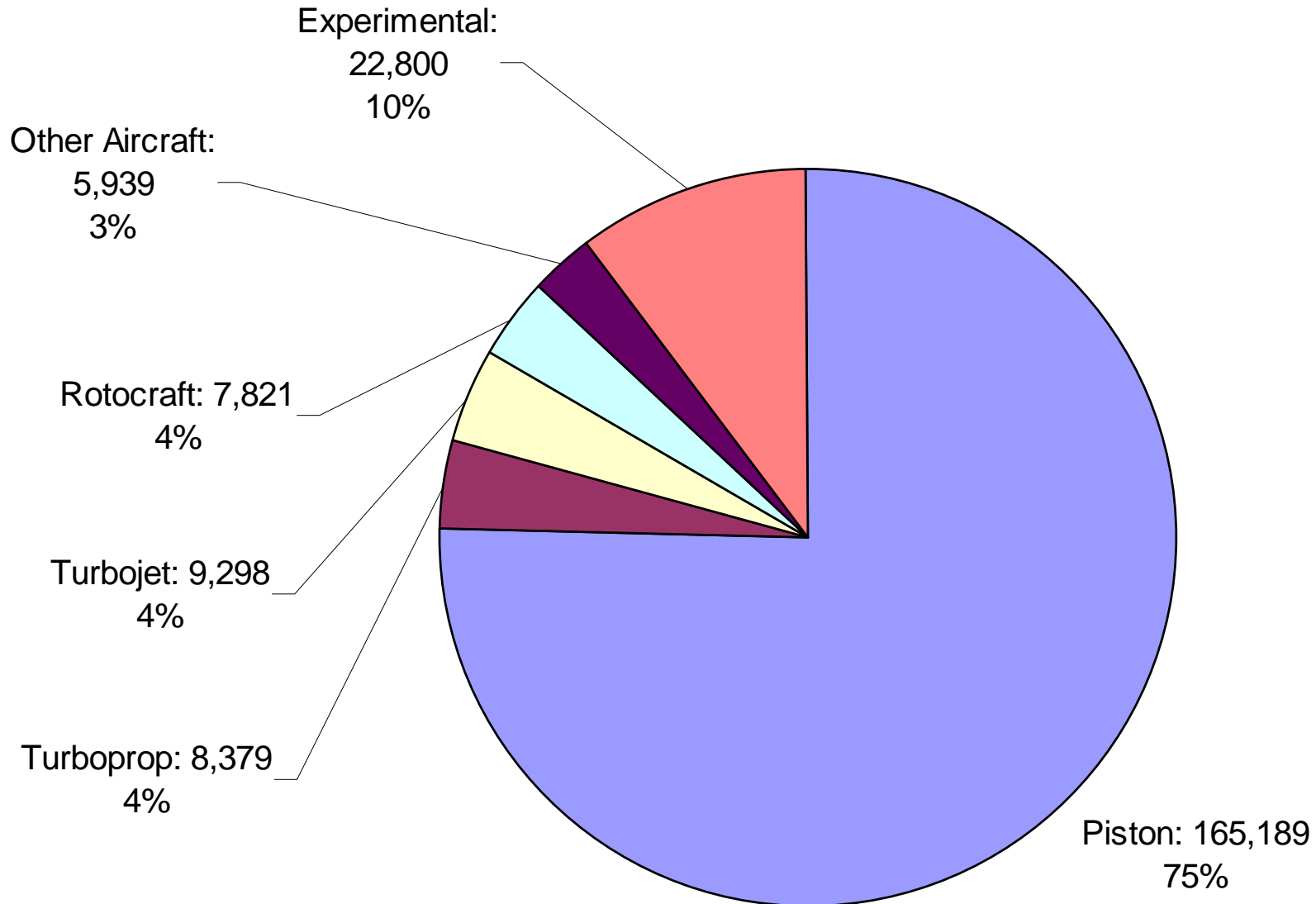
Key Points

- Piston engine airplanes drive fleets and hours flown, including IFR hours flown
- Over one-half of active GA aircraft report no IFR flight hours
- Almost all turboprop and turbojet hours are under IFR
- Jets, turboprops and rotorcraft fly most hours per aircraft
- Utilization falls with age
- Almost one half of active fleet \geq 30 years old
- Over one half of fleet is between 20 and 40 years old
- Base annual retirement rate of 3% implies over 150,000 aircraft in existing fleet still active in 2017

Objectives

- ➔ Provide a baseline of information on GA fleet and utilization
- ➔ Examine how these aircraft use NAS today, and likely impact of NGATS
- ➔ Explore equipage requirements under various NGATS deployment scenarios
- ➔ Presentation framework
 - Utilization by aircraft and user
 - Fleet age
 - Equipage
 - Operating costs

2004 General Aviation and Air Taxi Active Aircraft by Aircraft Type

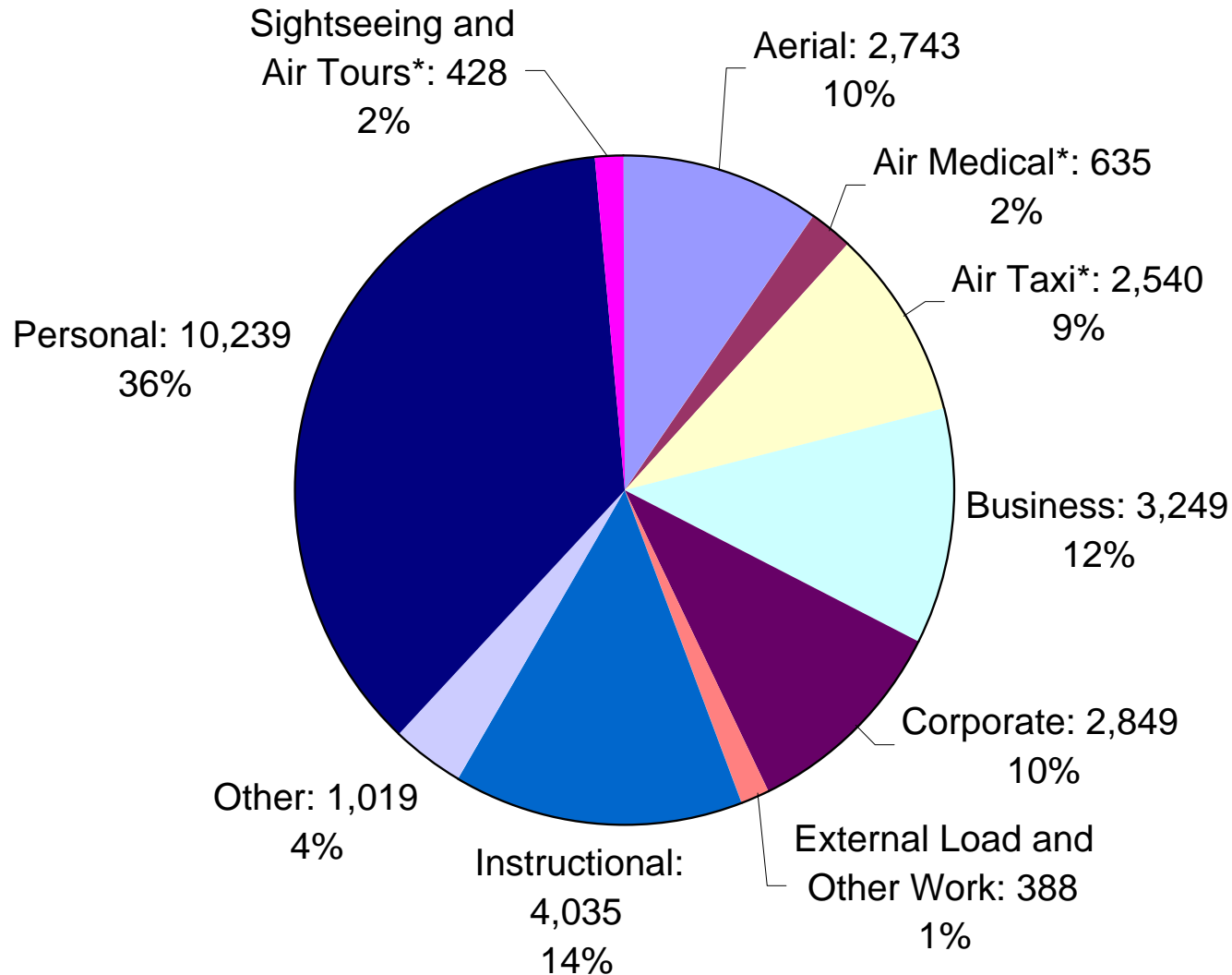


Source: 2004 General Aviation and Air Taxi Survey, Table 1.1

Utilization of Existing Fleet



2004 GA and AT Total Hours Flown (thousands)

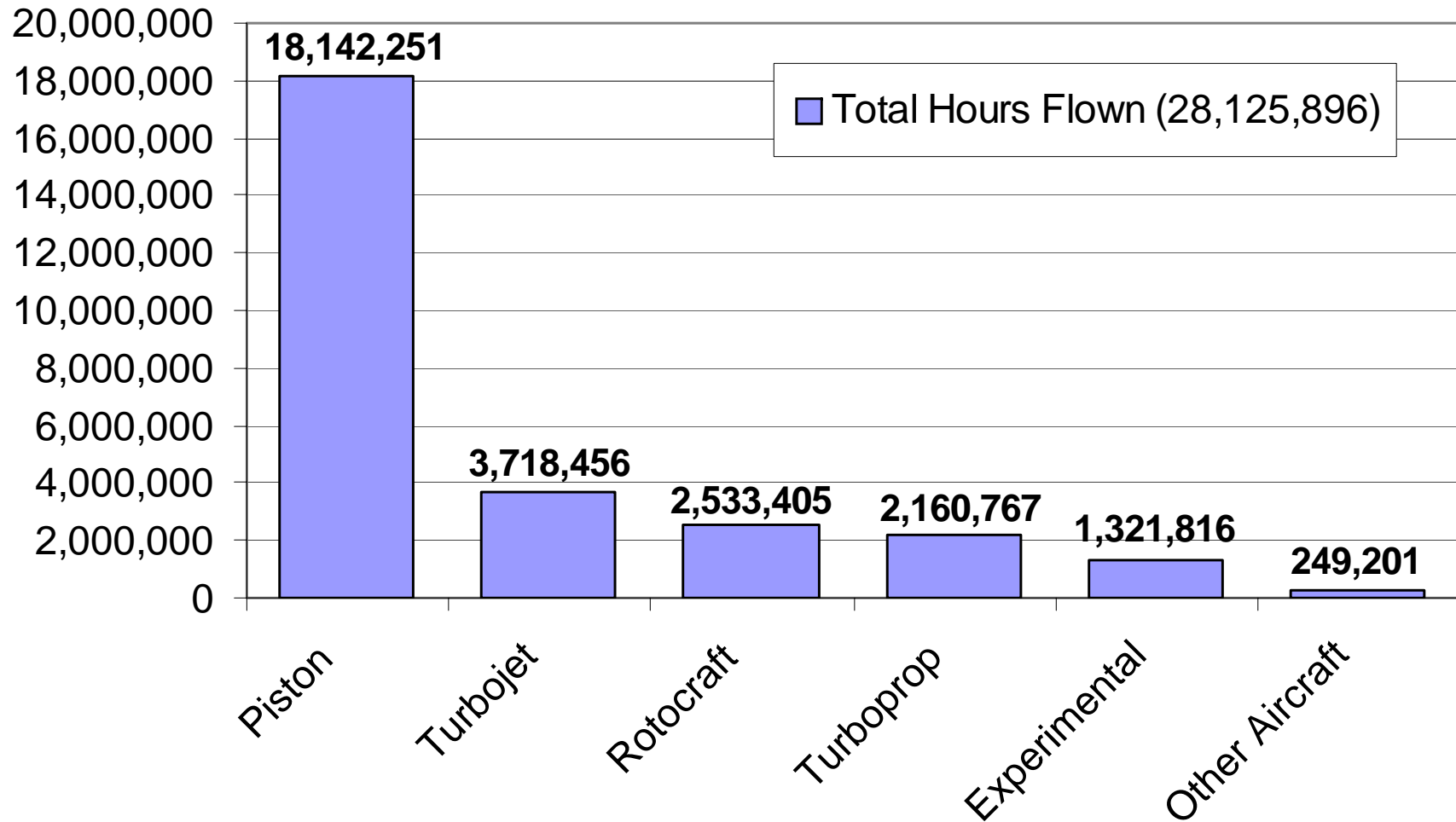


Note: Includes 506,721 Public Use hours flown

*Includes Part 135 Flying

Source: 2004 General Aviation and Air Taxi Survey, Table 1.6

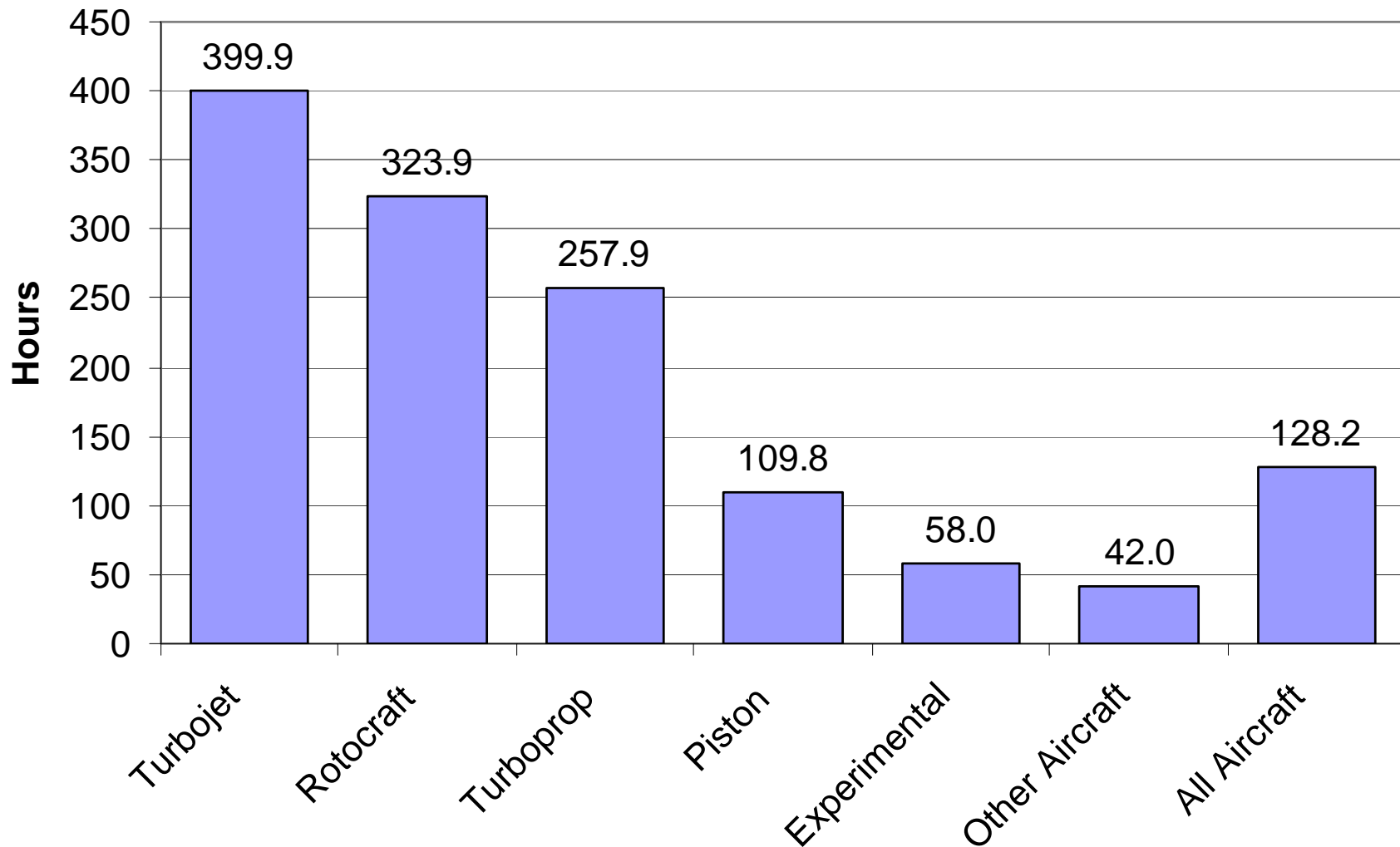
2004 GA and AT Total Hours Flown



Note: Beginning in 2004, commuter activity is excluded from all estimates.

Source: 2004 General Aviation and Air Taxi Survey, Table 1.4

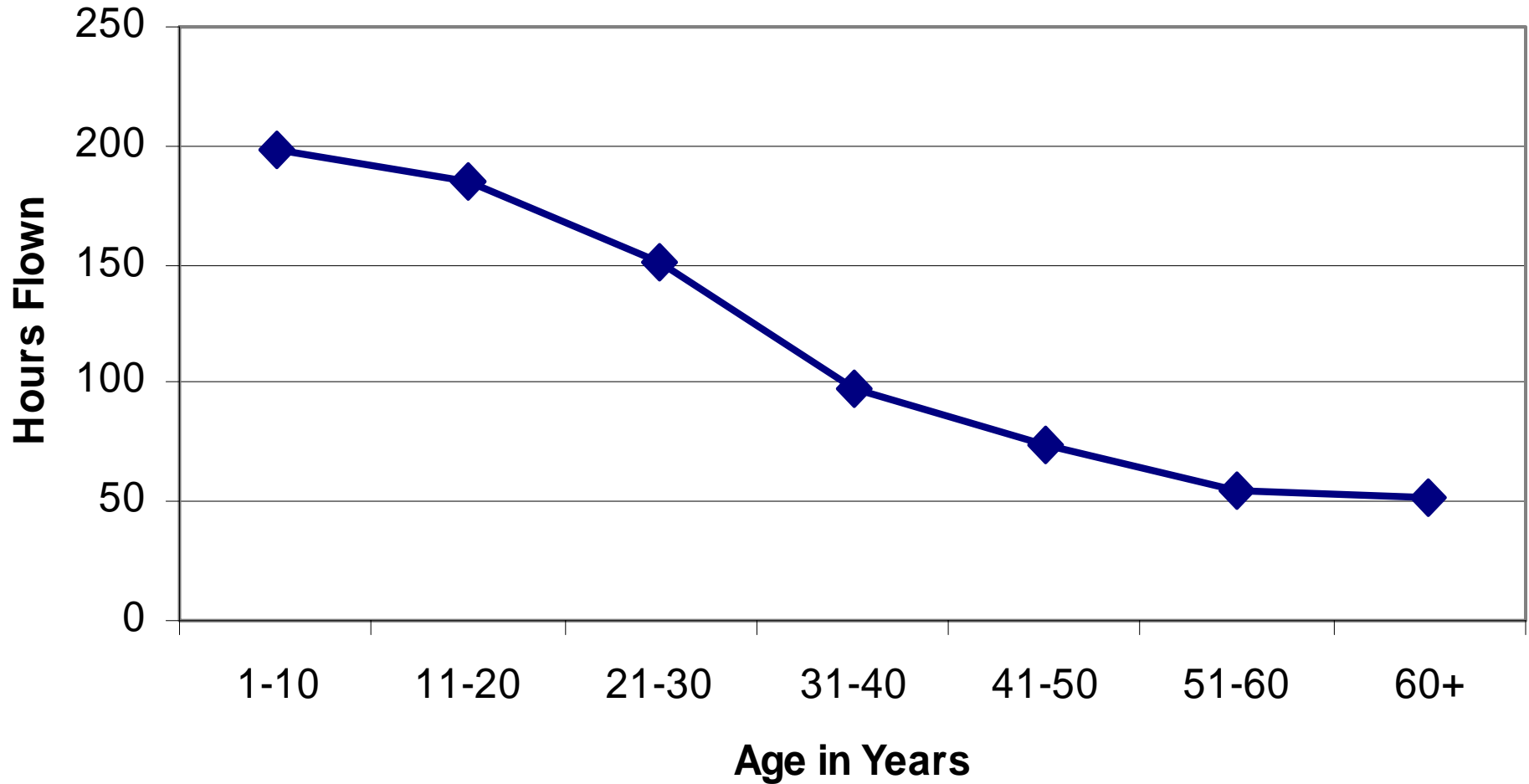
2004 GA and AT Average Hours Flown by Aircraft Type



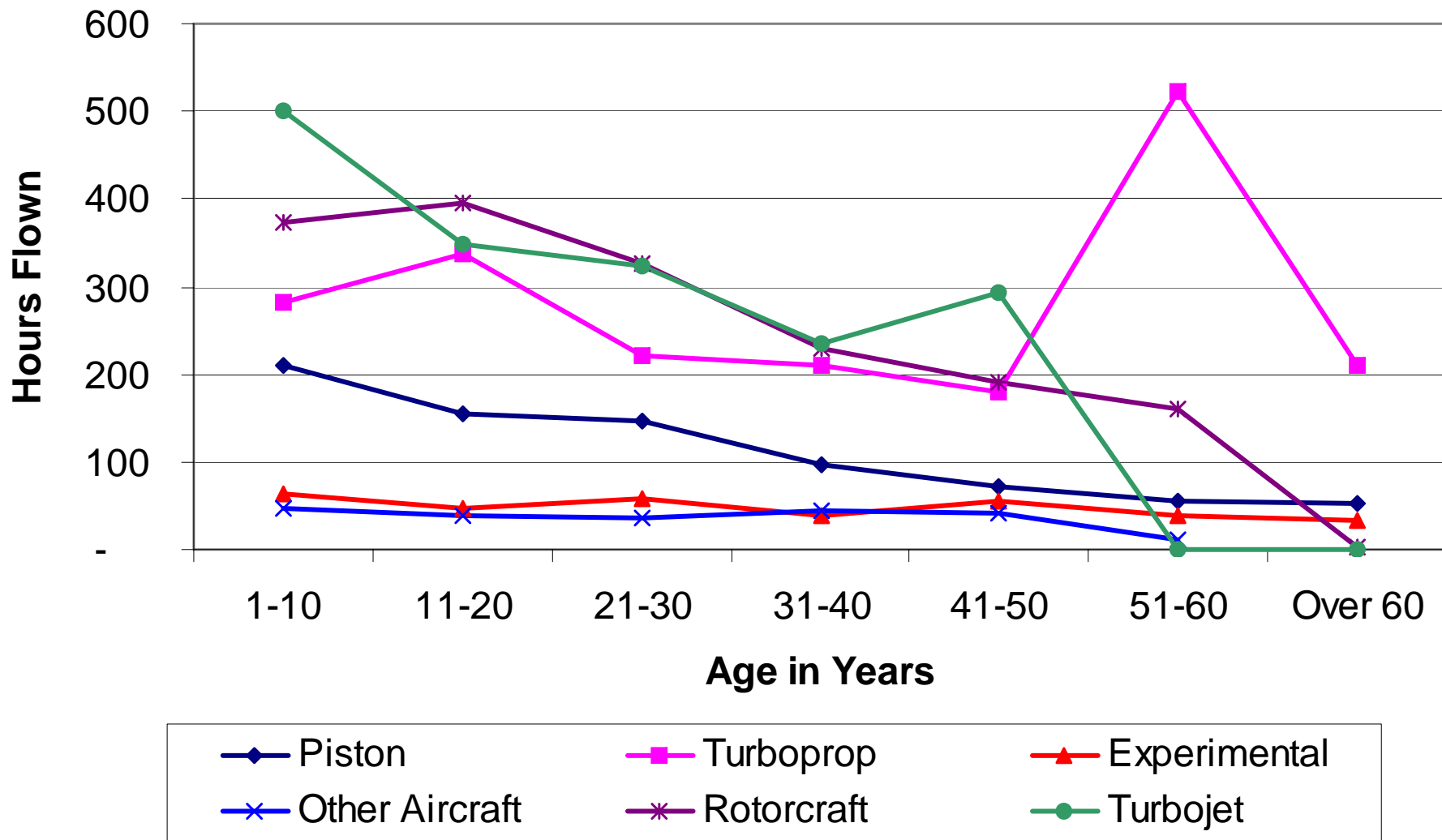
Note: Beginning in 2004, commuter activity is excluded from all estimates.

Source: 2004 General Aviation and Air Taxi Survey, Table 1.7

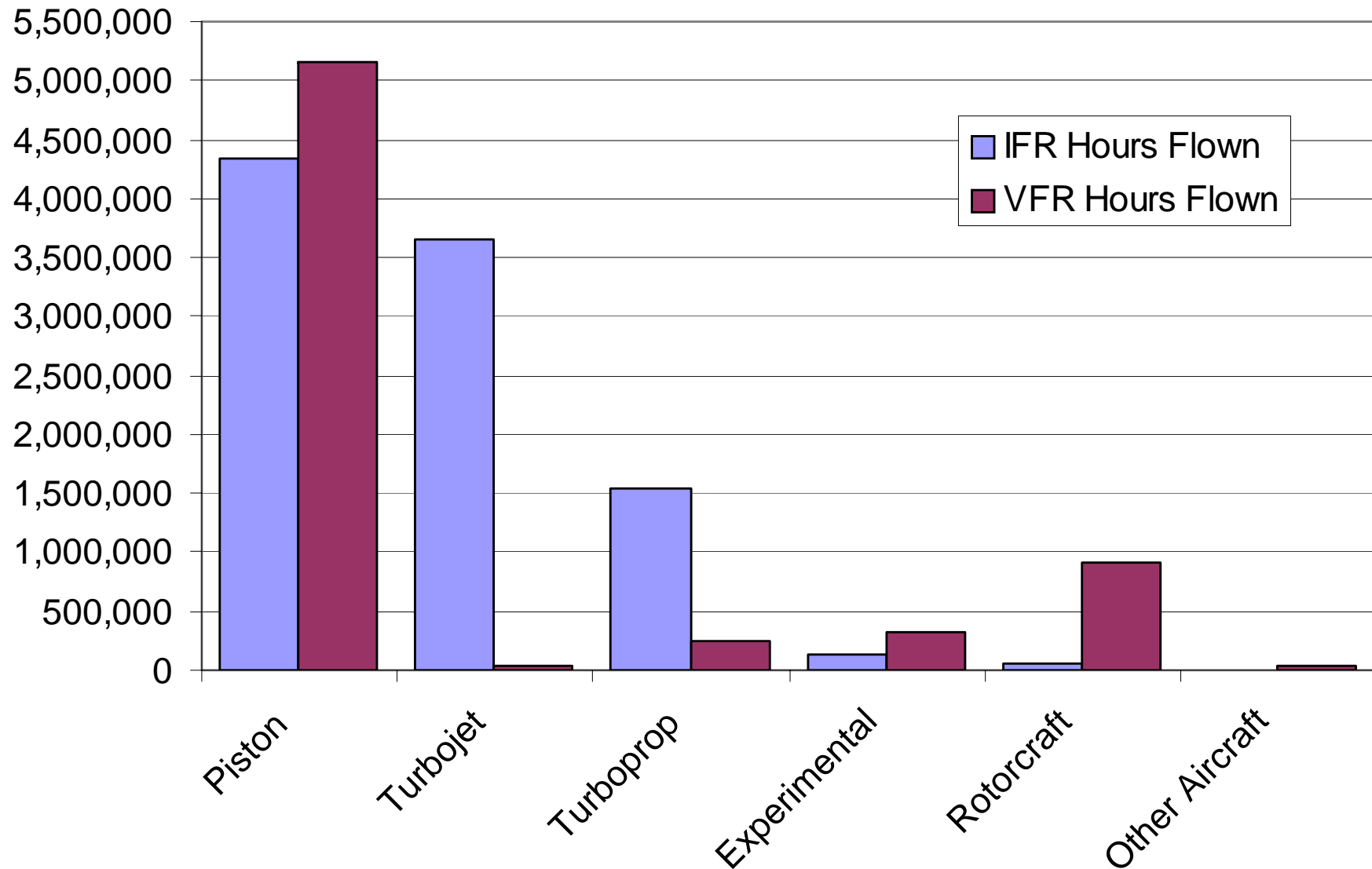
GA Average Hours Flown Per Year by Age



Average Hours Flown Per Year by Aircraft Type and Age

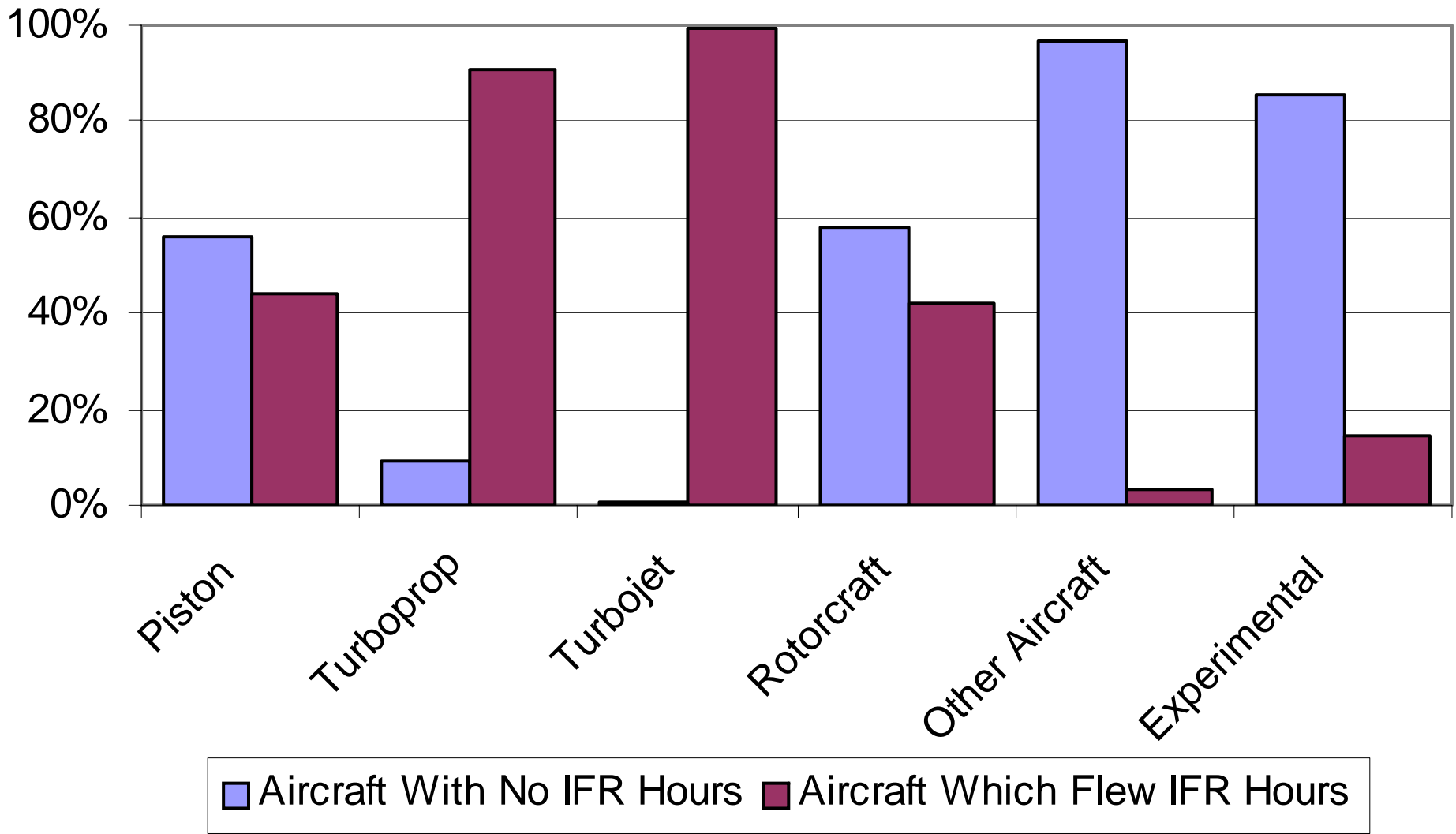


2004 GA and AT IFR and VFR Hours Flown by Aircraft Type



Source: 2004 General Aviation and Air Taxi Survey, Table 4.7

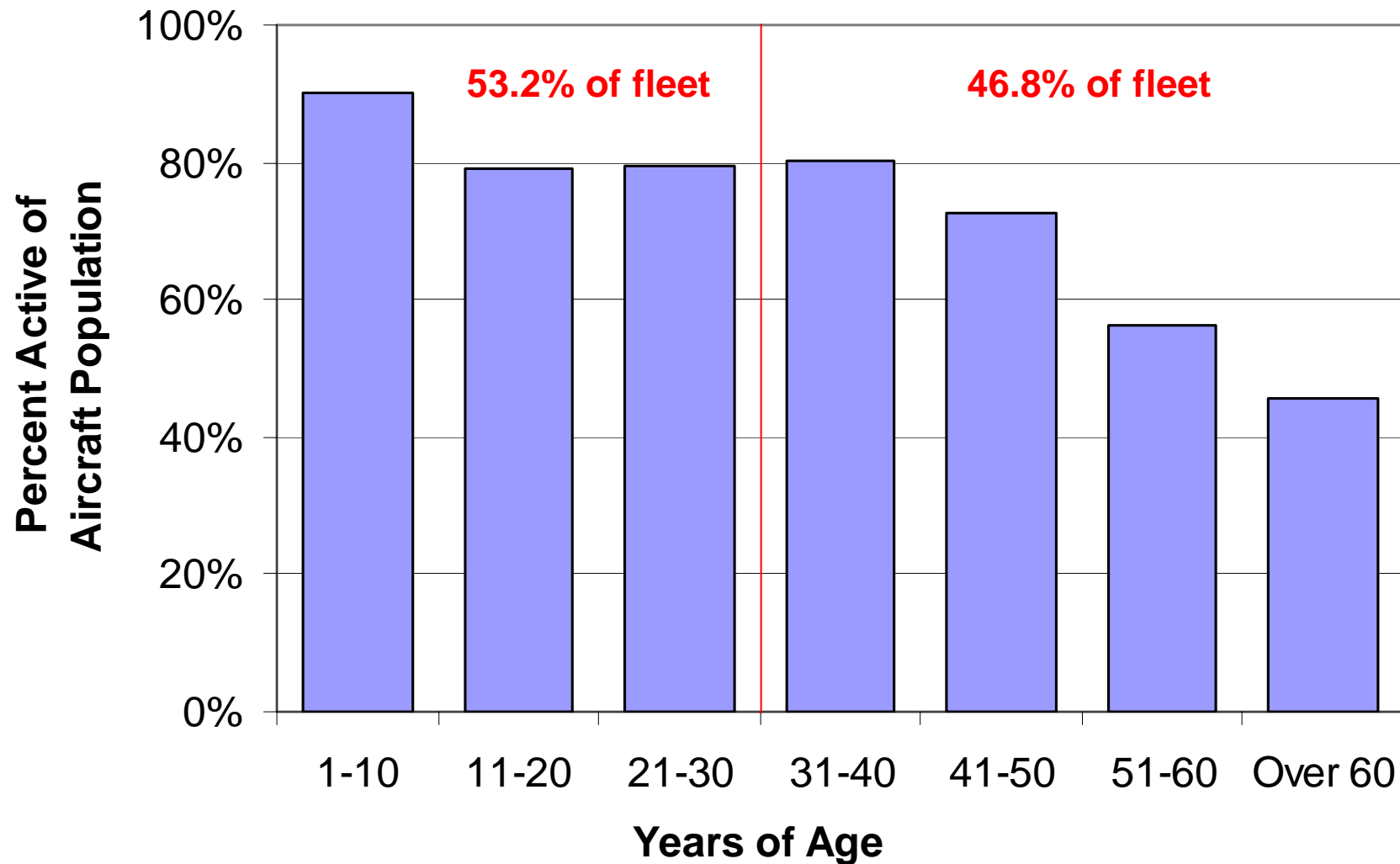
Percent of Active Fleet Flying IFR (FY 2004)



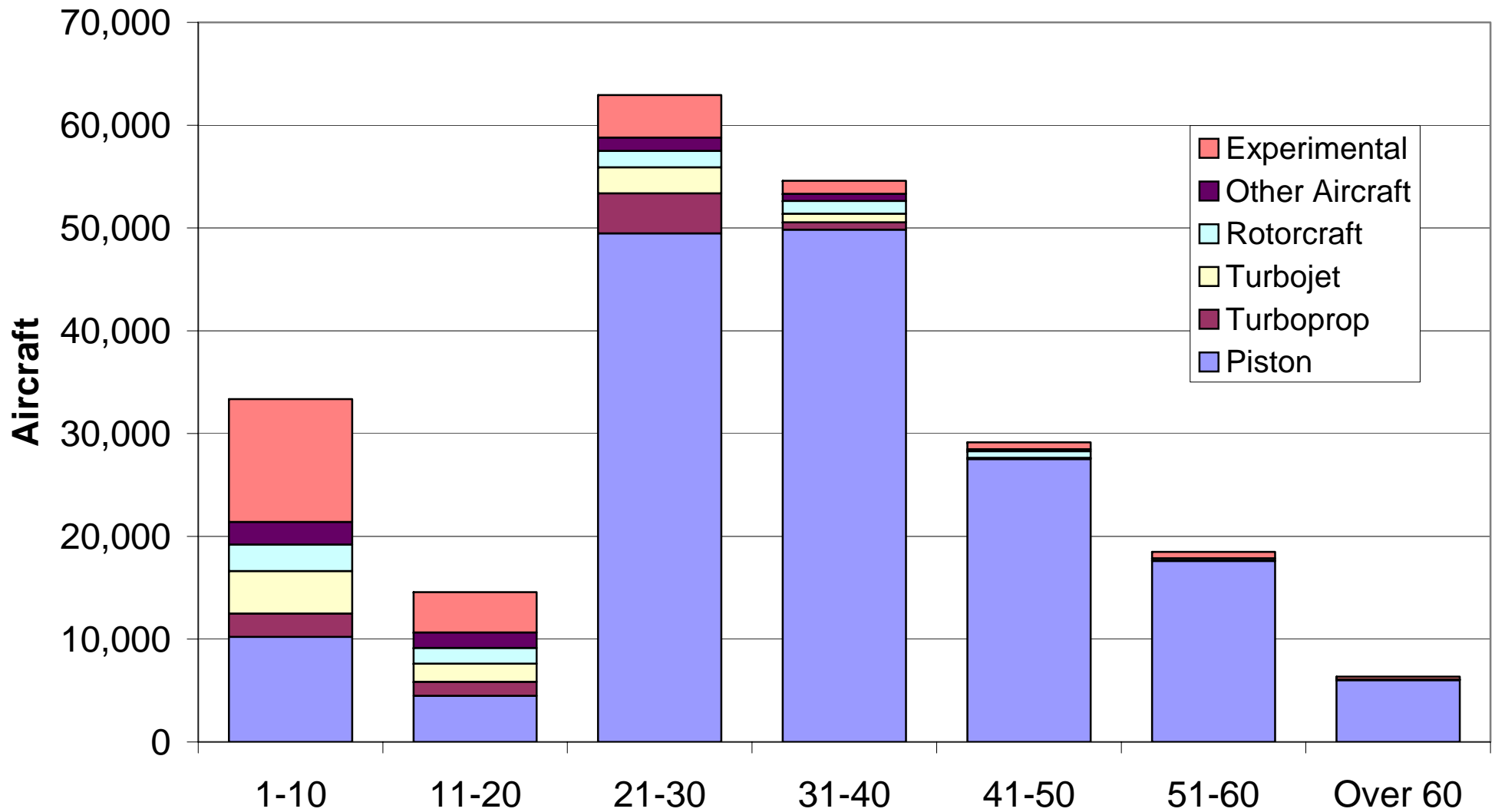
Age of Existing GA Fleet



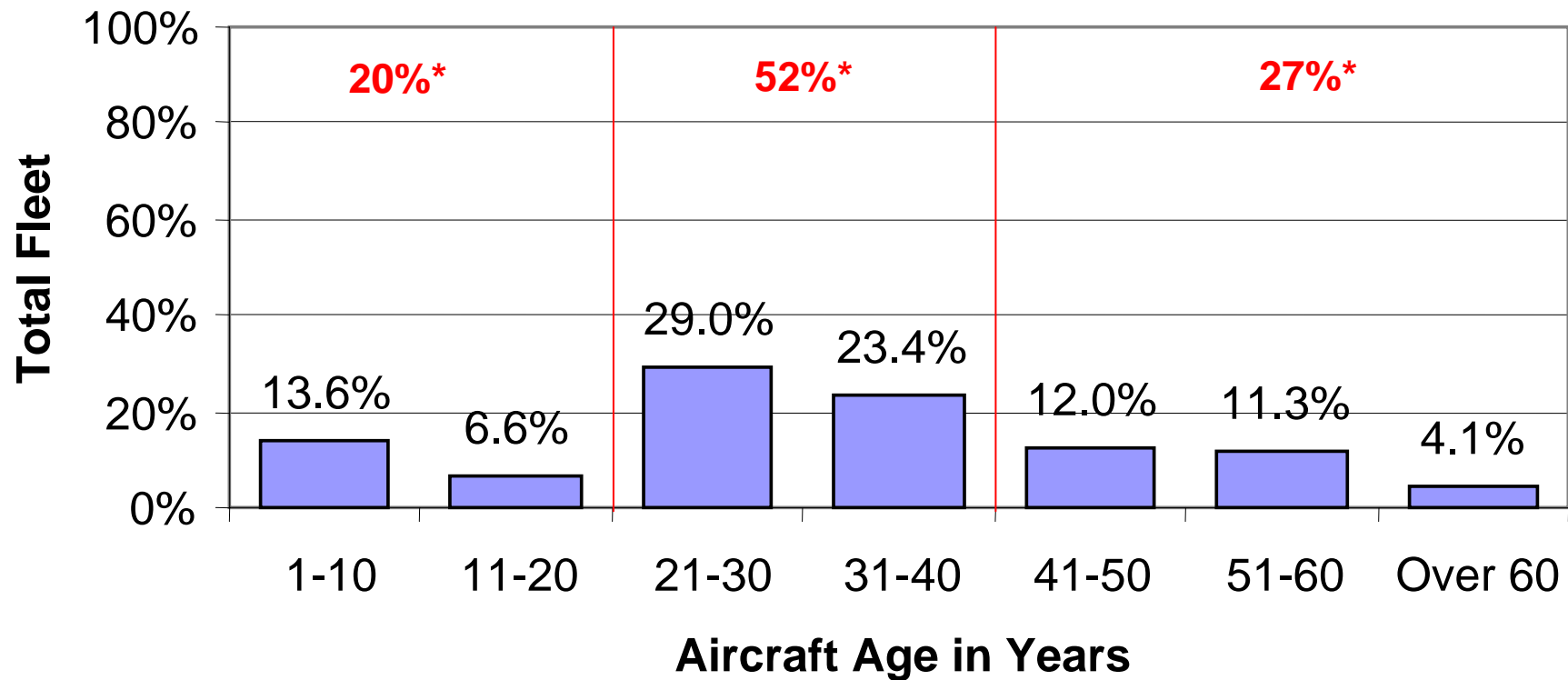
2004 General Aviation and Air Taxi Estimated Active Fleet



Count of Active Aircraft by Age Bracket and Type - 2004



2004 General Aviation and Air Taxi Total Fleet by Age (Active and Inactive)



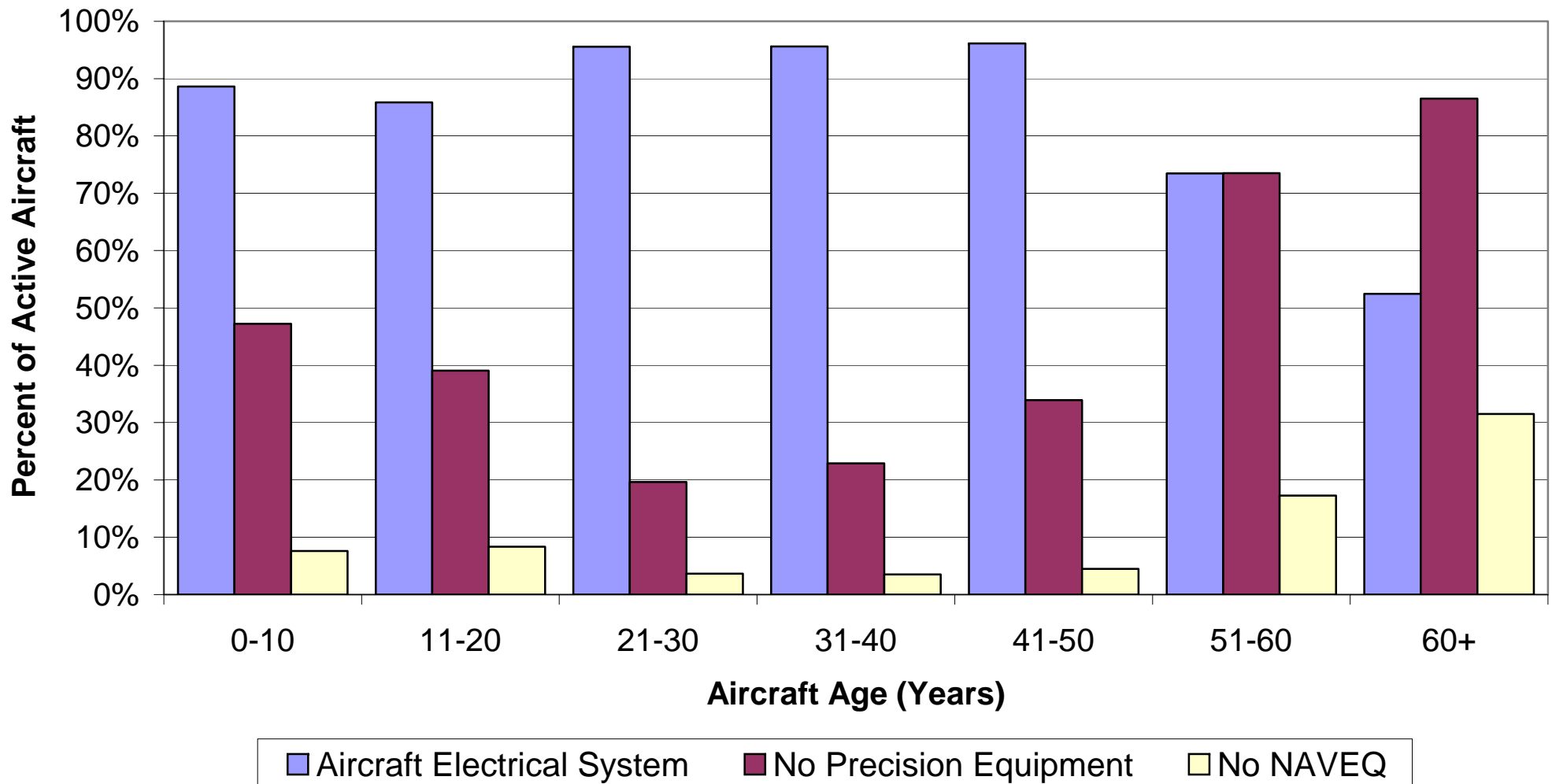
*Approximate shares

Installed Equipment



Basic Capabilities

2004 General Aviation and Air Taxi Active Aircraft

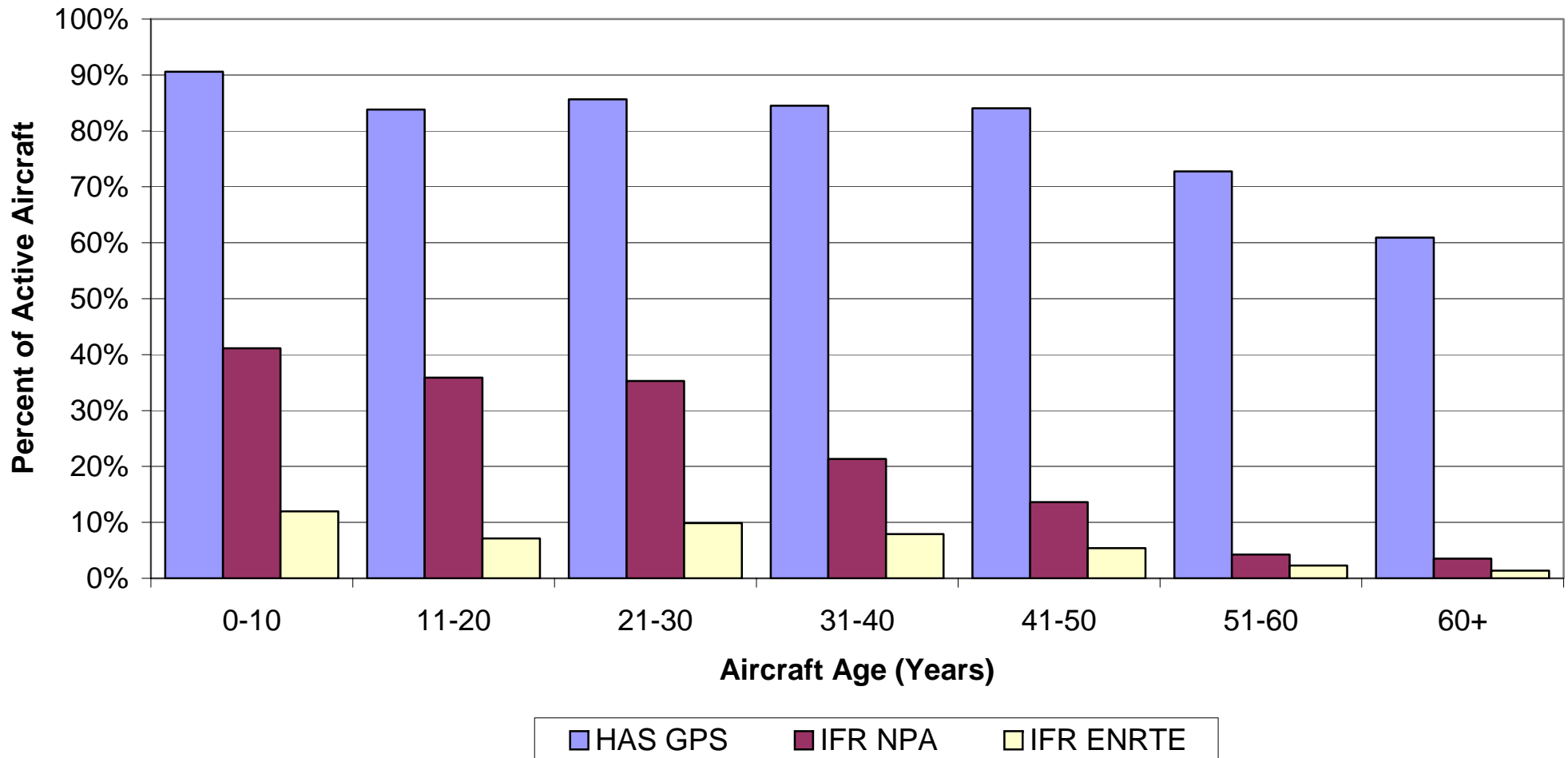


Note: Beginning in 2004, commuter activity is excluded from all estimates.

Source: 2004 General Aviation and Air Taxi Survey, Table AV.5 and Table 2.5

Type of Navigation Equipment

2004 General Aviation and Air Taxi Active Aircraft with Navigation Equipment by Age of Aircraft

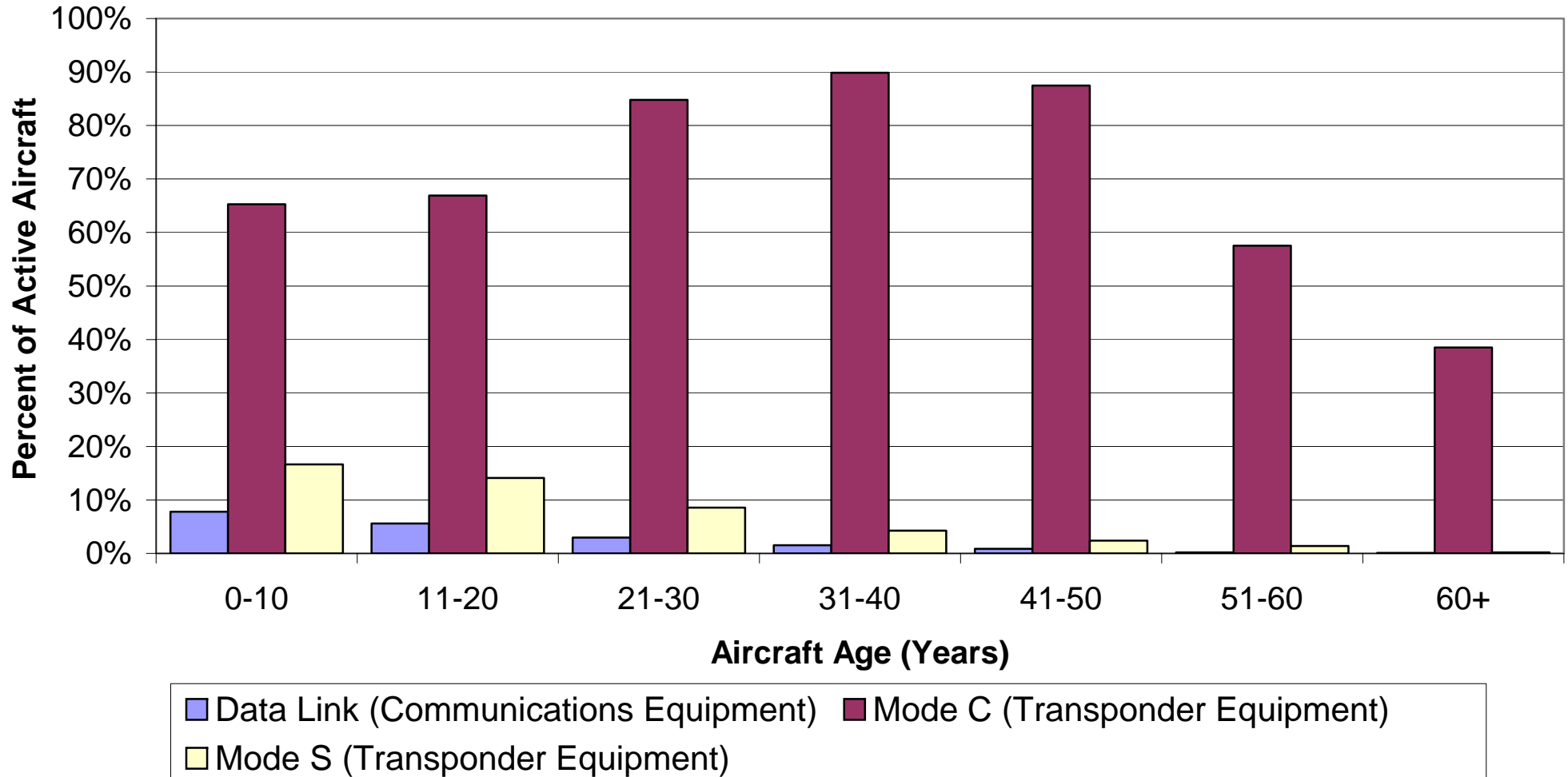


Note: Beginning in 2004, commuter activity is excluded from all estimates.

Source: 2004 General Aviation and Air Taxi Survey, Table AV.5 and Table 2.5

Transponder / Data Link

2004 General Aviation and Air Taxi Active Aircraft

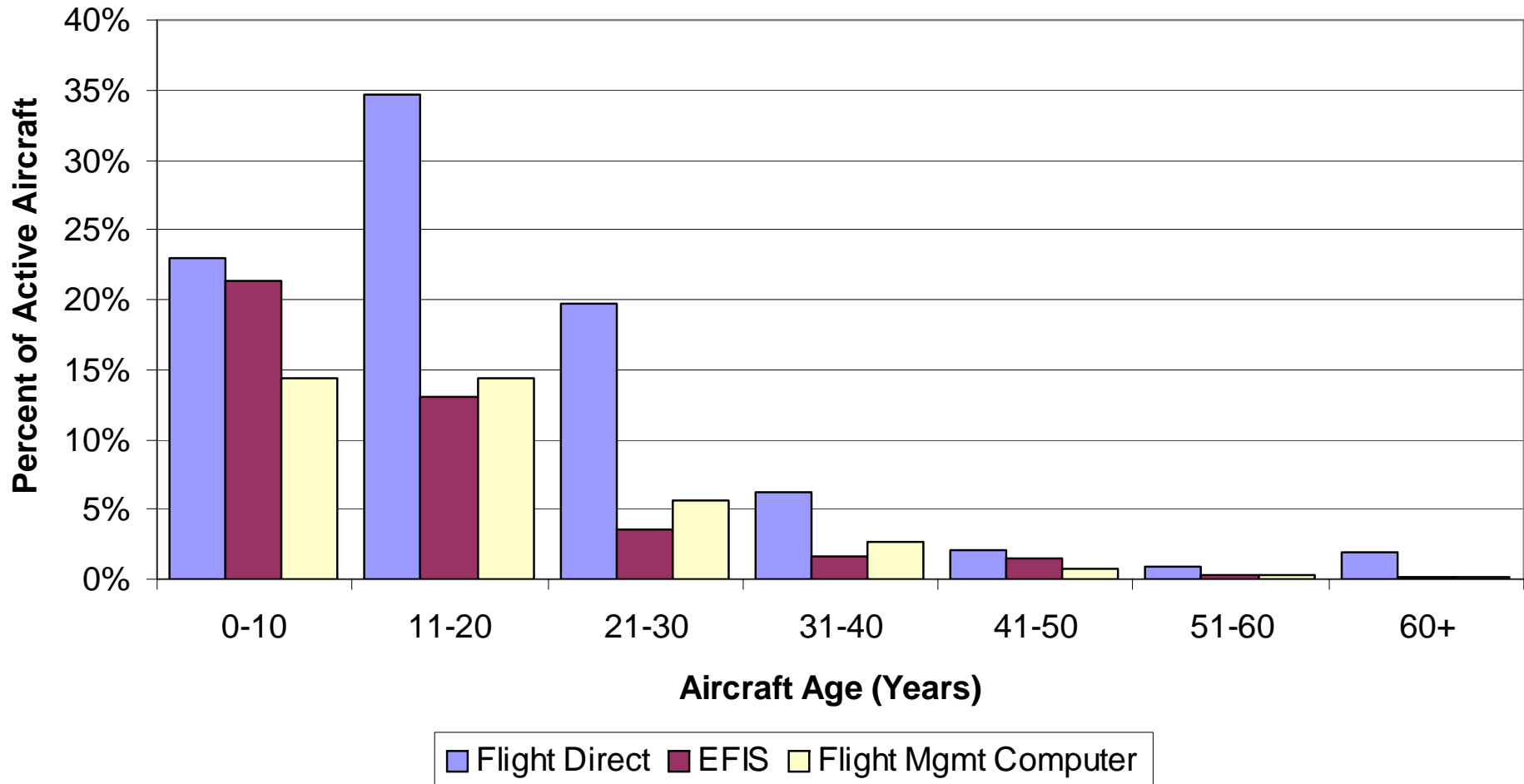


Note: Beginning in 2004, commuter activity is excluded from all estimates.

Source: 2004 General Aviation and Air Taxi Survey, Table AV.5 and Table 2.5

Guidance and Control Equipment

2004 General Aviation and Air Taxi Active Aircraft with Guidance and Control Equipment



Note: Beginning in 2004, commuter activity is excluded from all estimates.

Source: 2004 General Aviation and Air Taxi Survey, Table AV.20 and Table 2.5

Fleet Economics



GA and Air Taxi Operating and Fixed Costs (Weighted by Hours)

Aircraft Category	Crew	Fuel & Oil	Maintenace	Variable Operating Costs	Fixed Cost Per Hour	Total Cost Per Hour
Piston	\$46	\$41	\$56	\$143	\$170	\$313
Turbojet	\$567	\$686	\$649	\$1,902	\$1,867	\$3,769
Turboprop	\$237	\$233	\$345	\$815	\$486	\$1,301
Rotorcraft	\$160	\$98	\$265	\$521	\$586	\$1,107

Source: Economic Values for FAA Investment and Regulatory Decisions, A Guide, 2004,
 Tables 4-10 and 3-10
 Fuel @ approximately \$2.50/gallon

GA and Air Taxi Operating and Fixed Costs (Weighted by Hours)

Economic Values Category		Crew	Fuel & Oil	Maintenance	Variable Operating Costs (Including Crew)	Fixed Cost Per Hour	Total Cost Per Hour (Including Crew)
1	Piston Engine Airplanes 1 to 3 seats (<=200hp)	\$45	\$12	\$30	\$87	\$34	\$121
2	Piston Engine Airplanes 1 to 3 seats (>200hp)	\$45	\$42	\$56	\$143	\$215	\$358
3	Piston Engine Airplanes 4 to 9 seats One-Engine (<=200hp)	\$45	\$30	\$40	\$116	\$139	\$255
4	Piston Engine Airplanes 4 to 9 Seats One-Engine (>200hp)	\$45	\$43	\$61	\$150	\$235	\$385
5	Piston Engine Airplanes 4 to 9 Seats Multi-Engine	\$45	\$94	\$118	\$257	\$256	\$513
6	Piston Engine Airplanes 10 or more Seats	\$112	\$118	\$141	\$372	\$107	\$479
7	Turboprop Airplanes 1 to 9 seats One-Engine	\$181	\$139	\$142	\$462	\$340	\$802
8	Turboprop Airplanes 1 to 9 seats Multi-Engine	\$238	\$214	\$410	\$862	\$479	\$1,341
9	Turboprop Airplanes 10 to 19 seats	\$244	\$271	\$396	\$911	\$543	\$1,454
10	Turboprop Airplanes 20 or more seats	\$433	\$323	\$357	\$1,113	\$532	\$1,645
11	Turbojet/Turbofan Airplanes <=12,500 lbs	\$475	\$445	\$433	\$1,353	\$1,058	\$2,411
12	Turbojet/Turbofan Airplanes >12,500 lbs and <=65,000 lbs	\$559	\$631	\$677	\$1,868	\$1,737	\$3,605
13	Turbojet/Turbofan Airplanes >65,000 lbs	\$713	\$1,217	\$807	\$2,737	\$3,419	\$6,156
14	Rotorcraft Piston <=6,000 lbs	\$45	\$34	\$97	\$176	\$381	\$557
15	Rotorcraft Turbine <=6,000 lbs	\$188	\$94	\$259	\$539	\$561	\$1,100
16	Rotorcraft Piston >6,000 lbs	NR	NR	NR	NR	NR	NR
17	Rotorcraft Turbine >6,000 lbs	\$233	\$231	\$596	\$1,060	\$1,075	\$2,135
18	Other	NR	NR	NR	NR	NR	NR
All Aircraft		\$109	\$114	\$138	\$362	\$728	\$1,090

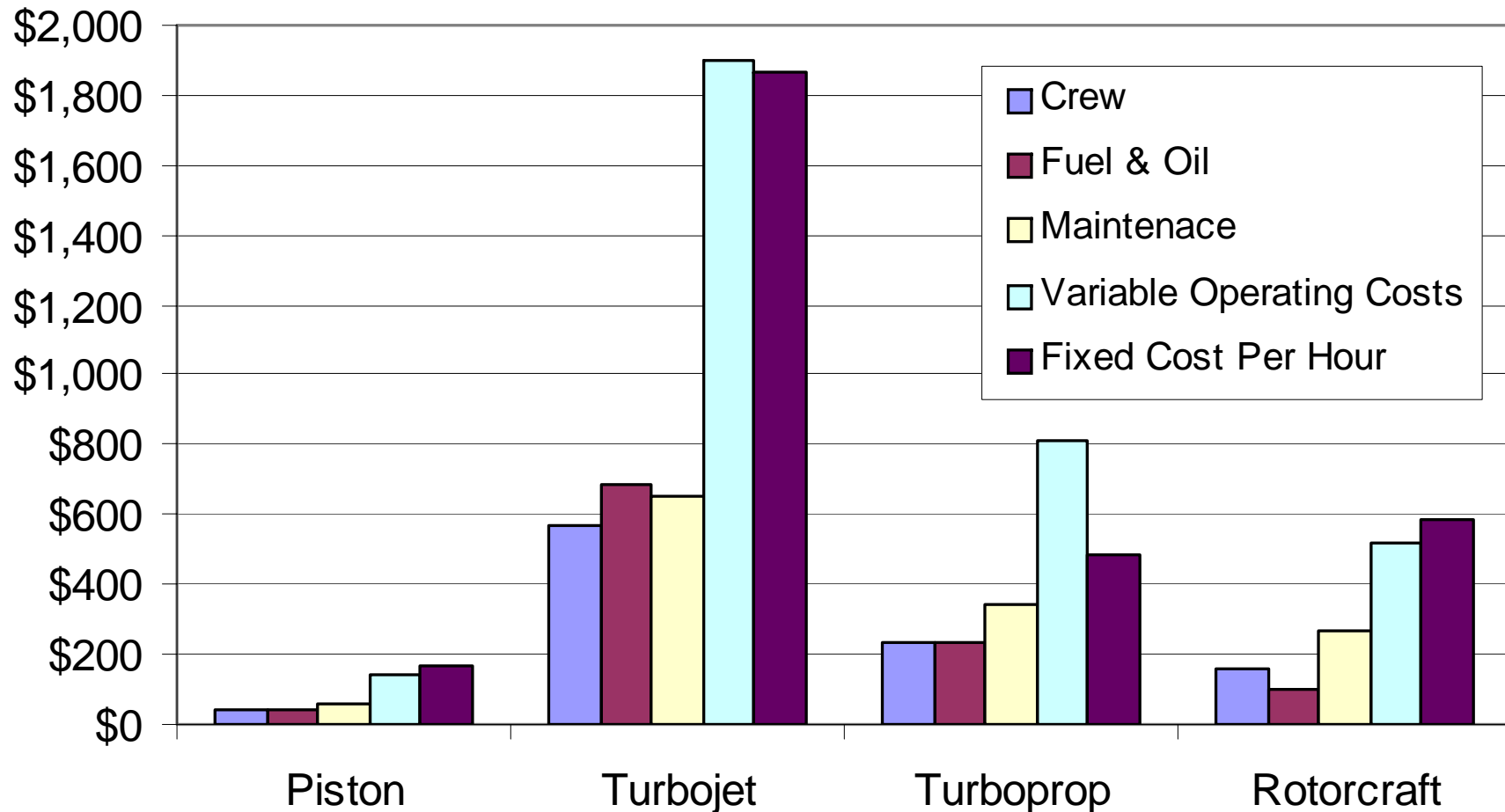
Source: Economic Values for FAA Investment and Regulatory Decisions, A Guide, 2004, Table 4-10
 Fuel @ approximately \$2.50/gallon

Summary Air Carrier Average Aircraft Operating Costs and Block Hours

Economic Values Category	Part 121 (Form 41 and 298-C carriers)			Part 135 (298-C Carriers)			Total (Part 121 + Part 135)		
	Average Variable Costs Per Block Hour	Average Total Costs Per Block Hour	Total Block Hours*	Average Variable Costs Per Block Hour	Average Total Costs Per Block Hour	Total Block Hours*	Average Variable Costs Per Block Hour	Average Total Costs Per Block Hour	Total Block Hours*
Two-Engine Narrow-Body	\$1,894	\$2,456	11,512,186	NR	NR	NR	\$1,894	\$2,456	11,512,186
Two-Engine Wide-Body	\$3,343	\$4,403	2,191,418	NR	NR	NR	\$3,343	\$4,403	2,191,418
Three-Engine Narrow-Body	\$3,723	\$4,459	409,095	NR	NR	NR	\$3,723	\$4,459	409,095
Three-Engine Wide-Body	\$4,501	\$6,359	593,434	NR	NR	NR	\$4,501	\$6,359	593,434
Four-Engine Narrow-Body	\$4,908	\$6,177	92,226	NR	NR	NR	\$4,908	\$6,177	92,226
Four-Engine Wide-Body	\$5,945	\$8,054	437,135	NR	NR	NR	\$5,945	\$8,054	437,135
Regional Jet under 70 seats	\$728	\$1,055	1,683,830	\$661	\$1,657	790	\$728	\$1,055	1,684,620
Regional Jet 70 to 100 seats	\$1,139	\$1,707	102,049	NR	NR	NR	\$1,139	\$1,707	102,049
Turboprops under 20 seats (Part 23)	\$560	\$719	317,961	\$424	\$580	61,638	\$538	\$697	379,599
Turboprops under 20 seats (Part 25)	\$710	\$1,027	25,545	NR	NR	NR	\$710	\$1,027	25,545
Turboprops with 20 or more seats	\$649	\$914	912,817	\$728	\$973	6,902	\$650	\$914	919,719
Piston Engine (Part 23)	\$316	\$371	32,153	\$225	\$283	188,474	\$238	\$296	220,627
Piston Engine (Part 25)	\$1,784	\$1,809	14,891	\$51	\$71	133	\$1,769	\$1,793	15,024
Total	\$2,103	\$2,766	18,324,740	\$287	\$377	257,937	\$2,078	\$2,733	18,582,677

Source: Economic Values for FAA Investment and Regulatory Decisions, A Guide, 2004, Table 4-3

Hourly Costs by Aircraft Type



Source: Economic Values for FAA Investment and Regulatory Decisions, A Guide, 2004, Tables 4-10 and 3-10

Estimated Market Values of Pre-1982, and 1982 and Later

General Aviation Aircraft (\$2003)

Aircraft Category	Pre-1982			1982 and Beyond		
	Number of Aircraft	Average Value Per Aircraft	Average Aircraft Age (in 2003)	Number of Aircraft	Average Value Per Aircraft	Average Aircraft Age (in 2003)
Piston	143,474	\$61,053	36	17,583	\$214,589	11
Turboprop	3,446	\$584,360	26	3,578	\$1,328,490	12
Turbojet	2,706	\$1,859,658	26	5,496	\$8,234,411	8
Rotorcraft	3,444	\$3,444	29	3,179	\$771,862	10
All Aircraft	160,592	\$94,661	35	50,651	\$ 1,817,062	10

Source: Economic Values for FAA Investment and Regulatory Decisions, A Guide, 2004, Table 5-6 and 5-7

Estimated Market Values of Pre-1982, 1982 and Later General Aviation Aircraft (\$2003)

Economic Values Category		Pre-1982			1982 and Beyond		
		Number of Aircraft	Average Value Per Aircraft	Average Aircraft Age (in 2003)	Number of Aircraft	Average Value Per Aircraft	Average Aircraft Age (in 2003)
1	Piston engine airplanes 1 to 3 seats (<200hp)	31,246	\$21,496	42	1,804	\$76,108	9
2	Piston engine airplanes 1 to 3 seats (>200hp)	4,364	\$72,982	42	1,714	\$256,885	10
3	Piston engine airplanes 4 to 9 seats one-engine (<200hp)	49,970	\$40,991	34	4,382	\$108,914	11
4	Piston engine airplanes 4 to 9 seats one-engine (>200hp)	41,924	\$85,927	34	8,069	\$264,955	10
5	Piston engine airplanes 4 to 9 seats two-engine	15,187	\$132,754	32	1,596	\$360,326	15
6	Piston engine airplanes 10 or more seats	783	\$130,762	34	18	\$290,000	19
7	Turboprop airplanes 1 to 9 seats one-engine	62	\$187,976	24	942	\$824,903	8
8	Turboprop airplanes 1 to 9 seats two-engine	1,546	\$383,106	27	603	\$918,754	14
9	Turboprop airplanes 10 to 19 seats	1,690	\$773,026	25	1,960	\$1,628,946	13
10	Turboprop airplanes 20 or more seats	148	\$699,467	27	72	\$3,179,785	18
11	Turbojet/Turbofan two-engine airplanes <12,000 lbs.	710	\$824,692	29	1,319	\$3,187,683	9
12	Turbojet/Turbofan airplanes >12,500 lbs. and <65,000 lbs.	1,524	\$1,715,000	25	3,445	\$7,170,976	9
13	Turbojet/Turbofan airplanes >65,000 lbs.	473	\$3,878,931	29	731	\$22,347,618	7
14	Rotorcraft piston <6,000 lbs.	1,107	\$69,630	33	1,219	\$166,504	8
15	Rotorcraft turbine <6,000 lbs.	2,004	\$319,045	27	1,636	\$856,887	10
16	Rotorcraft piston >6,000 lbs.	18	NA	NA	6	NA	NA
17	Rotorcraft turbine >6,000 lbs	333	\$1,047,191	32	324	\$2,620,187	14
18	Other	7,504	NA	NA	20,810	NA	NA
All Aircraft		160,592	\$94,661	35	50,651	\$1,817,062	10

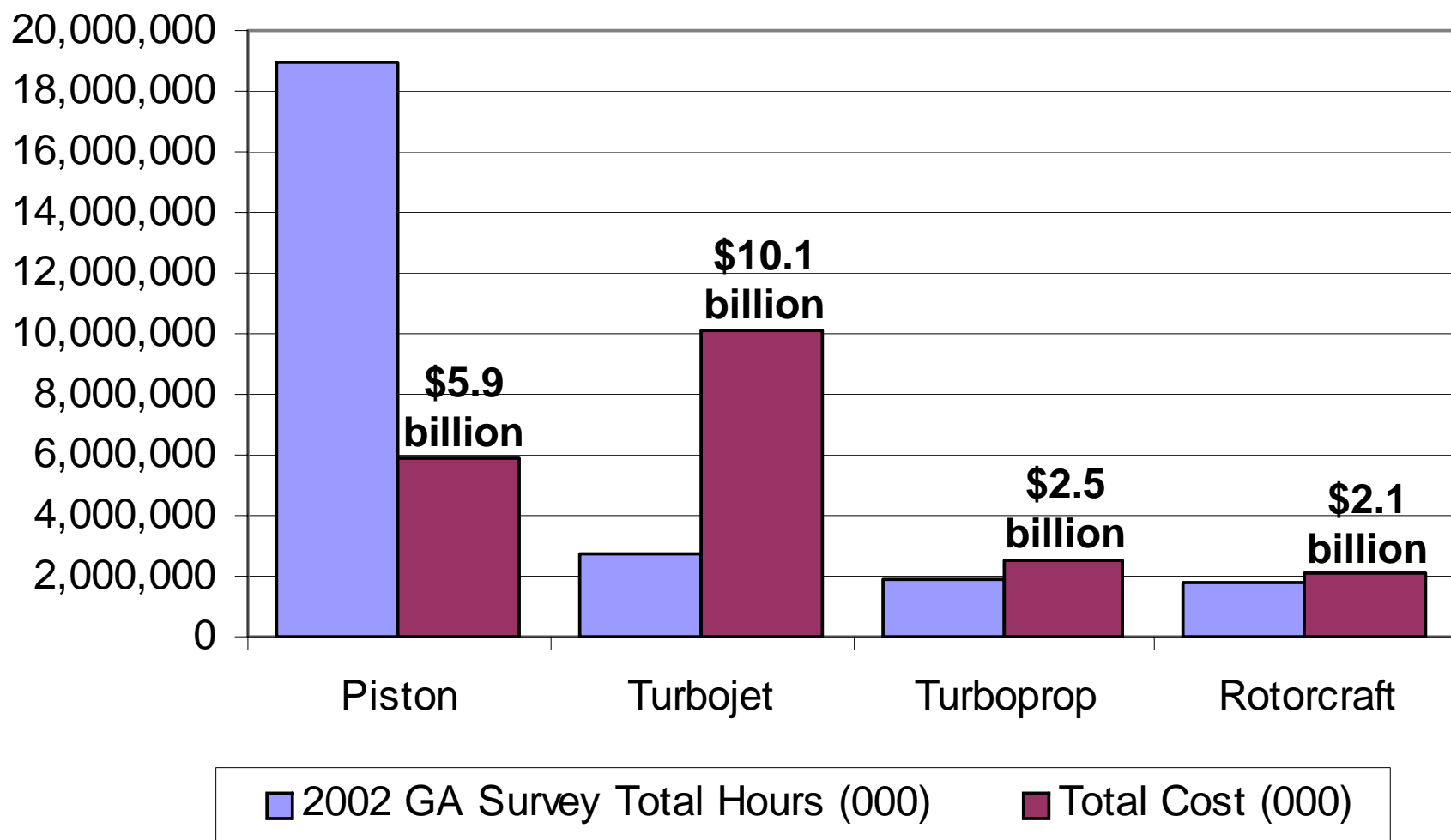
Source: Economic Values for FAA Investment and Regulatory Decisions, A Guide, 2004, Tables 5-6 and 5-7.

Estimated Market Values of Air Carrier Aircraft

Economic Values Category	Air Carrier - Passenger			Air Carrier - Cargo		
	Number of Aircraft	Weighted Average Base Value US\$ Millions	Weighted Average Estimated Current Market Value US\$ Millions	Number of Aircraft	Weighted Average Base Value US\$ Millions	Weighted Average Estimated Current Market Value US\$ Millions
Two-Engine Narrow-Body	3,913	\$16.47	\$13.67	128	\$14.99	\$11.23
Two-Engine Wide-Body	554	\$49.24	\$42.26	177	\$26.35	\$23.03
Three-Engine Narrow-Body	368	\$0.71	\$0.71	348	\$1.08	\$1.02
Three-Engine Wide-Body	169	\$7.77	\$6.44	163	\$20.22	\$16.90
Four-Engine Narrow-Body	50	\$0.32	\$0.32	128	\$2.92	\$2.92
Four-Engine Wide-Body	133	\$38.42	\$30.02	121	\$27.79	\$19.33
Regional Jet Under 70 seats	976	\$14.07	\$13.23	NR	NR	NR
Regional Jet 70 to 100 seats	101	\$14.99	\$13.40	NR	NR	NR
Turboprop Under 20 seats (Part 23)	1,147	\$0.48	\$0.56	NR	NR	NR
Turboprop Under 20 seats (Part 25)	112	\$0.10	\$0.10	NR	NR	NR
Turboprops with 20 or more seats	1,143	\$1.95	\$2.19	NR	NR	NR
Piston Engine (Part 23)	NR	NR	NR	NR	NR	NR
Piston Engine (Part 25)	NR	NR	NR	NR	NR	NR
All Aircraft	8,666	\$13.48	\$11.46	1,065	\$13.14	\$10.64

Source: Economic Values for FAA Investment and Regulatory Decisions, A Guide, 2004, Table 5-1

Total Hours and Costs by Aircraft Type

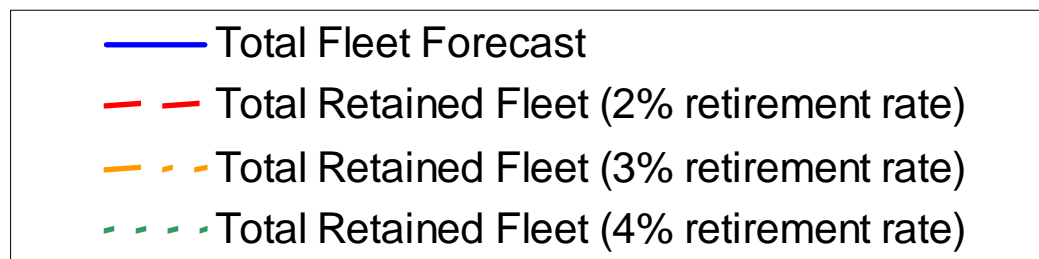
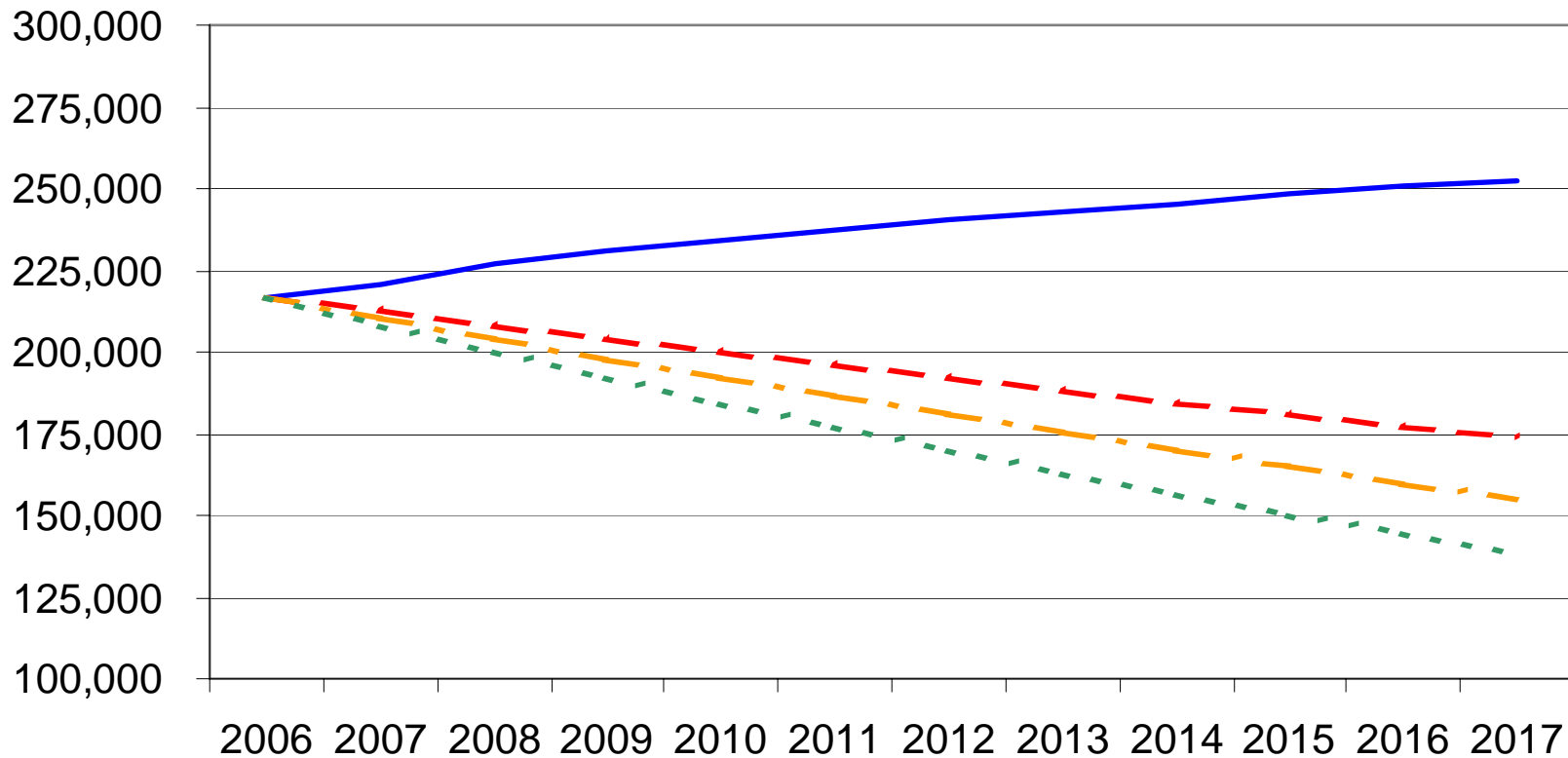


Source: Economic Values for FAA Investment and Regulatory Decisions, A Guide, 2004, Tables 4-10 and 3-10

Forecast and Retained Fleet

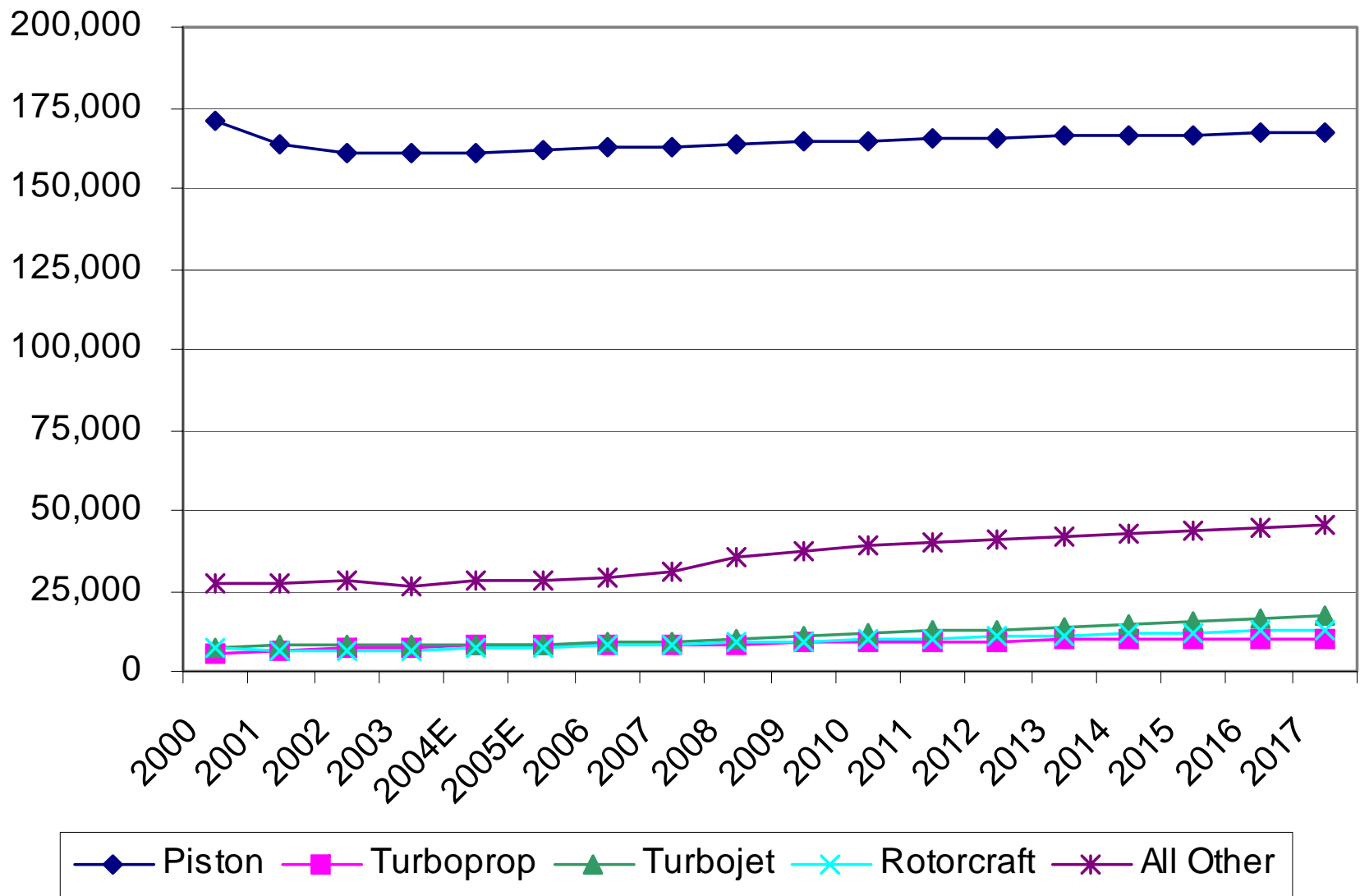


GA and AT Fleet Forecast and Retained Fleet Summary



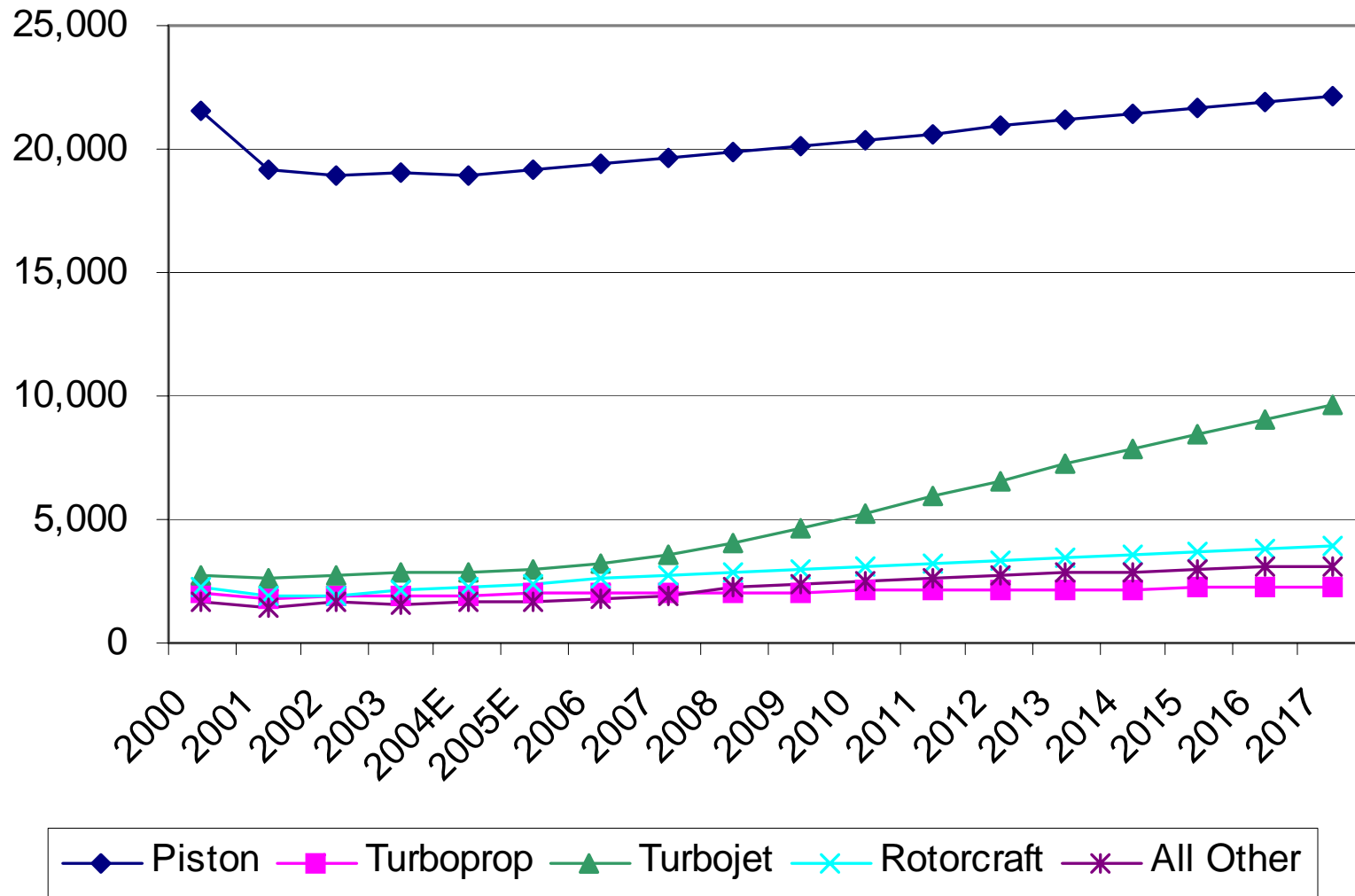
Total fleet forecast source: FAA Aerospace Forecast FY2006-2017, Table 27

Active General Aviation and Air Taxi Aircraft



Source: 1999-2003, FAA General Aviation and Air Taxi Activity (and Avionics) Surveys.
 Note: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

Active General Aviation and Air Taxi Hours Flown



Source: 1999-2003, FAA General Aviation and Air Taxi Surveys.

1) Estimates have been revised to reflect changes in edit and estimation procedures, and may not be comparable to estimates prior to 1995.

Note: An active aircraft is one that has a current registration and was flown at least one hour during the previous calendar year.